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EXAMINER

DESAI, NAISHADH N

ART UNIT	PAPER NUMBER
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2834

NOTIFICATION DATE	DELIVERY MODE
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09/11/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/566,773	Applicant(s) PFANNSCHMIDT, BERND	
	Examiner NAISHADH N. DESAI	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-7 and 9-19 is/are pending in the application.
- 4a) Of the above claim(s) 11-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-7,9,10 and 16-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 5-7 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hellmund (US 1373002) in view of Johnsen (US 5331238) and further in view of Matsuoka et al (JP 9-233766).

1. Regarding claim 1, Hellmund teaches:

An electric machine, comprising (Fig 1):

a housing defining an axis (Fig 1);

a coolant entry arranged on one side of the housing (Fig 1,28);

a cooling device for cooling the magnet arrangement (Fig 1,28),

wherein the cooling device has a ring shaped coolant channel (Fig 1), extending about an outer circumference of the magnet arrangement (Fig 1,26,27) and being fluidly

Art Unit: 2834

connected with the coolant entry to receive incoming coolant from the coolant entry (Fig 1,28,26) and separate circumferential rectilinear axial channels in fluid communication with the coolant channel to guide the coolant in axial direction to an opposite side of the housing (Fig 1,26,27,15,19,8).

Hellmund does not appear to explicitly teach that a cylindrical magnet arrangement is received in the housing and that it defines a circumference.

Johnsen teaches an apparatus wherein a cylindrical magnet arrangement is received in the housing and that it defines a circumference (Fig 7 and abstract and Col 2 ll 63-66). Johnsen does not teach that “the ring-shaped coolant channel and the axial channels are configured such that incoming coolant is first distributed by the ring-shaped coolant channel in a circumferential direction before entering the axial channels and flowing essentially uniformly about the circumference of the cylindrical magnet arrangement”.

Matsuoka et al teaches a device with cooling wherein “the ring-shaped coolant channel (Fig 6, 13a) and the axial channels (Fig 6,15b and Fig 5,15b) are configured such that incoming coolant (Fig 6, arrows indicating coolant flow) is first distributed by the ring-shaped coolant channel (Fig 6,13a and arrows) in a circumferential direction before entering the axial channels (Fig 6,15b and arrows) and flowing essentially uniformly about the circumference of the cylindrical magnet arrangement (Fig 5,arrows)”.

It would have been obvious to a person having ordinary skills in the art at the time the invention was made to modify the device of Hellmund with the teachings of

Art Unit: 2834

Johnsen to use a magnet arrangement received in the housing defining a circumference and with the circumferential and axial cooling structure of Matsuoka et al. The motivation to do so would be that it would provide a device having an improved cooling system (Col 1 ll 12-17 of Hellmund) with improved performance and efficiency. The motivation would also be that it would allow for cooling of both the rotor and stator (abstract of Matsuoka et al).

2. Regarding claim 2, Hellmund (Fig 1) teaches that the coolant channel being part of the housing (also Johnsen Figs 5 and 7 and abstract).

3. Regarding claim 5, Hellmund (Fig 1) teaches that the magnet arrangement has a laminated core forming a wall of the coolant channel (also Johnsen Fig 5).

4. Regarding claim 6, Hellmund (Fig 1) teaches that the coolant channel is arranged upstream of the cylindrical magnet arrangement as viewed in an axial direction (also Johnsen Fig 7 shows the coolant channel to be arranged both down stream and upstream of the core, viewed in the axial direction).

5. Regarding claim 7, Johnsen teaches that the coolant channel is open in one or both axial directions (Fig 7), and further comprising a bearing shield and/or an annular cover for covering the coolant channel (Fig 7, 124 and 128). Also Hellmund (Fig 1) teaches that the coolant channel is open in one or both axial directions.

Art Unit: 2834

6. Regarding claim 17, Hellmund (Fig 1) and Johnsen (Fig 7) teaches that the coolant entry is arranged axially on the coolant channel with respect to the cylindrical magnet arrangement.

7. Regarding claim 18, Matsuoka et al (Fig 6) teaches that the coolant channel (Fig 6,13a) has a cross section which is greater than a summed cross section of the axial channels (Fig 6,15b).

8. Regarding claim 19, Matsuoka et al (Fig 6) teaches that each of the axial channels (Fig 6,15b) is defined by a cross section which is smaller than a cross section of the ring-shaped coolant channel (Fig 6,13a) so that a flow resistance applied by the ring-shaped coolant channel is smaller than a flow resistance applied by the axial channels to thereby force the coolant to flow first in the ring-shaped coolant channel in the circumferential direction (Fig 6, arrows indicating coolant flow).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hellmund (US 1373002) and Johnsen (US 5331238) in view of Matsuoka et al (JP9-233766) as applied to claim 1 above and further in view of Akers et al (US 3604013).

9. Regarding claim 9 Hellmund (Fig 1) also teaches coolant channels with reduced dimensions in the radial direction. Johnsen also teaches coolant channels with reduced dimensions in the radial direction (Fig 3B). Johnsen does not teach that “the ring-shaped coolant channel and the axial channels are configured such that incoming

Art Unit: 2834

coolant is first distributed by the ring-shaped coolant channel in a circumferential direction before entering the axial channels and flowing essentially uniformly about the circumference of the cylindrical magnet arrangement". Hellmund and of Johnsen in view of Kawamichi do not teach the use of a terminal junction box. Akers et al teaches a motor terminal junction box, wherein the coolant channel has a reduced dimension in a radial direction in a region of the motor terminal junction box (Col 1 ll 65-67, Col 2 ll 1-2,47-61).

It would have been obvious to a person having ordinary skills in the art at the time the invention was made to modify the device of Hellmund and of Johnsen in view of Matsuoka et al to use the motor terminal junction box of Akers et al. The motivation to do so would be that it would allow for quick access to electrical connections within motor (Col 2 ll 51-53 of Akers et al) and for the motor terminal junction box to be installed during assembly of the motor.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hellmund (US 1373002) and Johnsen (US 5331238) in view of Matsuoka et al (JP9-233766) as applied to claim 1 above and further in view Fechner et al (5406152).

10. Regarding claim 10, Fechner teaches a housing constructed in the form of a pressure plate structure.

Hellmund teaches an electric machine. Hellmund does not appear to explicitly teach that a cylindrical magnet arrangement is received in the housing and that it defines a circumference. Johnsen teaches an apparatus wherein a cylindrical magnet

Art Unit: 2834

arrangement is received in the housing and that it defines a circumference (Fig 7 and abstract and Col 2 ll 63-66). Johnsen does not teach that “the ring-shaped coolant channel and the axial channels are configured such that incoming coolant is first distributed by the ring-shaped coolant channel in a circumferential direction before entering the axial channels and flowing essentially uniformly about the circumference of the cylindrical magnet arrangement”. Hellmund and Johnsen in view of Kawamichi do not appear to disclose the housing to be made of a pressure plate structure. Fechner et al teaches a housing which is formed by pressure plates (Col 4 ll 38-40). It would have been obvious to a person having ordinary skills in the art at the time the invention was made to modify the device of Hellmund and Johnsen in view of Matsuoka et al to use the pressure plates in the form of a housing of Fechner et al. The motivation to do so would be that it would reduce the costs of regulating and operating the electric device (Col 2 ll 30-33 of Fechner et al).

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hellmund (US 1373002) and Johnsen (US 5331238) in view of Matsuoka et al as applied to claim 1 above and further in view of Zysset (US 6191511).

11. Regarding claim 16, Zysset teaches that the housing has opposite drive and non-drive sides, the coolant entry being arranged on the non-drive side.

Hellmund teaches an electric machine. Hellmund does not appear to explicitly teach that a cylindrical magnet arrangement is received in the housing and that it defines a circumference. Johnsen teaches an apparatus wherein a cylindrical magnet

Art Unit: 2834

arrangement is received in the housing and that it defines a circumference (Fig 7 and abstract and Col 2 ll 63-66). Johnsen does not teach that “the ring-shaped coolant channel and the axial channels are configured such that incoming coolant is first distributed by the ring-shaped coolant channel in a circumferential direction before entering the axial channels and flowing essentially uniformly about the circumference of the cylindrical magnet arrangement”. Hellmund and Johnsen in view of Kawamichi do not appear to disclose the housing to have drive and non-drive sides (it is obvious that the motor housing will have drive and non-drive sides). Zysset teaches a housing which has opposite drive and non-drive sides (Fig 1 and Col 3 ll 15-20). It would have been obvious to a person having ordinary skills in the art at the time the invention was made to modify the device of Hellmund and Johnsen in view of Matsuoka et al to arrange the coolant entry to be on the non-drive side as taught by Zysset. The motivation to do so would be that it would provide for a compact motor having high output with few parts (Col 1 ll 10-12 of Zysset).

Response to Arguments

12. Applicant's arguments with respect to claims 1,2,5-7,9,10,16-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 for details.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

Art Unit: 2834

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NAISHADH N. DESAI whose telephone number is (571)270-3038. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen Leung can be reached on (571) 272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quyen Leung/
Supervisory Patent Examiner, Art Unit 2834

Naishadh N Desai
Patent Examiner